FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE - CS161
Fall 2015

Programming Assignment 4 - Due 11:55pm Thursday, October 29

In this assignment, you will write a pure LISP program to solve the N queens problem. The problem is to place N queens on an NxN chessboard so that no two queens are in the same row, column, or diagonal. If you place each queen in a separate row, then a solution can be described by giving the column numbers of each of the queens in order by row. For example, the list (3 1 4 2) represents a solution to the four queens problem. Note that the numbering of columns starts at 1. Your top-level function, called QUEENS, should take a single argument N, and return a single solution to the N-Queens problem. If there is no solution, it should return nil. Treat this problem as a constraint satisfaction problem (CSP) and solve it using depth-first-search while detecting states that violate constraints. Note that you are not allowed to use local search algorithms to solve this problem. Also, you cannot use any closed-form solution (i.e., using an equation to solve the N queens problem). Submit your commented LISP program in a file named **hw4.lsp** via **CCLE**.

Your algorithm will be evaluated by two measures: correctness and speed. 80% of the grade will be based on correctness. 20% will be based on the rank of your algorithm's speed with respect to the other correct algorithms submitted by your fellow students.

NOTE: Please write your code using good lisp style. You can use any lisp functions, predicates or operators introduced in class or in past assignments. You may also use any auxiliary functions you wish to write. Do not, however, use global variables.